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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/627,228

07/25/2003

Farhad K. Moghadam

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03/25/2008

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Supplemental  
Notice of Allowability**

**Application No.**

10/627,228

**Applicant(s)**

MOGHADAM ET AL.

**Examiner**

Rodney G. McDonald

**Art Unit**

1795

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to After Final Amendment filed 10-16-07.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date ____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date ____     | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other ____.   |

/Rodney G. McDonald/  
Primary Examiner, Art Unit 1795

## **REASONS FOR ALLOWANCE**

### ***Oath/Declaration***

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either an application data sheet or supplemental oath or declaration.

### ***Reasons for Allowance***

The following is an examiner's statement of reasons for allowance:

Claims 1, 3-14, 16, 17 and 27 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including converting the silicon- containing reactant into a silica glass insulating compound using primarily thermal energy to provide activation energy to drive the deposition reaction by exposing the substrate to oxygen radicals formed from a second reactant while biasing the substrate to promote a sputtering effect.

Claims 2, 19-22 and 28 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including converting the silicon-containing reactant into a silica glass insulating compound by exposing the

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substrate to oxygen radicals formed from a second reactant while introducing a fluent gas into the chamber and biasing the substrate to promote a sputtering effect, wherein an average atomic mass of all atomic constituents introduced into the chamber during the converting step is less than or equal to an average atomic mass of oxygen

Claims 15-28 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including converting the silicon-containing reactant into a silica glass insulating compound by exposing the substrate to a plasma formed from a second reactant comprising oxygen atoms while biasing the substrate to promote a sputtering effect, wherein an average atomic mass of all atomic constituents introduced into the chamber during the converting step is less than or equal to an average atomic mass of oxygen and wherein the substrate is maintained at a temperature between 300-800°C during growth of the silica glass film and wherein the silica glass film grows up from the bottom surface of the gap at a rate greater than it grows inward on the sidewall surface of the gap.

The closest prior art of record to Chiang et al. (U.S. Pat. 6,428,859) fails to suggest utilizing thermal energy to drive the reaction but instead uses kinetic energy. Furthermore, the combination of Chiang et al. (U.S. Pat. 6,428,859) with Sherman (U.S. Pat. 6,342,277) results in an oxygen source and one of the ion feed gases described in Chiang during the converting step having an average atomic mass greater than oxygen. The combination of Sherman and Chiang et al. does not result in the invention of claims 2 and 15 which requires that the average atomic mass of all constituents introduced

into the chamber during the converting step be less than or equal to the average atomic mass of oxygen.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/  
Primary Examiner, Art Unit 1795

Rodney G. McDonald  
Primary Examiner  
Art Unit 1795

RM  
March 14, 2008

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